

estimates, material use estimates, and number of workers. The evaluation assessed these quantities against current public and private capacity to treat and dispose of wastes.

4.1.12.1 Waste and Materials Impacts from Preconstruction Testing and Performance Confirmation

DOE expects preconstruction testing and performance confirmation activities to generate waste similar to and in about the same quantities as that generated during characterization activities with the exception that low-level radioactive waste would be generated in minimal quantities (DIRS 104508-CRWMS M&O 1999, p. 17). Based on 1997 waste generation reports, preconstruction testing and performance confirmation activities should produce about 3,200 cubic meters (110,000 cubic feet) of nonhazardous construction debris and sanitary and industrial solid waste (DIRS 104952-Sygitowicz 1998, pp. 2 and 4) and about 170 kilograms (380 pounds) (volume measurements were not available) of hazardous waste (DIRS 104882-Harris 1998, pp. 3 through 6) that would require disposal. In addition, other waste would be recycled rather than disposed. Wastewater would be generated from runoff, subsurface activities, restrooms, and change rooms.

WASTE TYPES

Construction/demolition debris: Discarded solid wastes resulting from the construction, remodeling, repair, and demolition of structures, road building, and land clearing that are inert or unlikely to create an environmental hazard or threaten the health of the general public. Such debris from repository construction would include such materials as soil, rock, masonry materials, and lumber.

Industrial wastewater: Liquid wastes from industrial processes that do not include sanitary sewage. Repository industrial wastewater would include water used for dust suppression, rinsewater from concrete production and transport, and process water from building heating, ventilation, and air conditioning systems.

Low-level radioactive waste: Radioactive waste that is not classified as high-level radioactive waste, transuranic waste, byproduct material containing uranium or thorium from processed ore, or naturally occurring radioactive material. The repository low-level radioactive waste would include such wastes as personal protective clothing, air filters, solids from the liquid low-level radioactive waste treatment process, radiological control and survey waste, and possibly used canisters (dual-purpose).

Sanitary sewage: Domestic wastewater from toilets, sinks, showers, kitchens, and floor drains from restrooms, change rooms, and food preparation and storage areas.

Sanitary and industrial solid waste: Solid waste that is neither hazardous nor radioactive. Sanitary waste streams include paper, glass, and discarded office material. State of Nevada waste regulations identify this waste stream as *household waste*.

Hazardous waste: Waste designated as hazardous by the Environmental Protection Agency or State of Nevada regulations. Hazardous waste, defined under the Resource Conservation and Recovery Act, is waste that poses a potential hazard to human health or the environment when improperly treated, stored, or disposed of. Hazardous wastes appear on special Environmental Protection Agency lists or possess at least one of the following characteristics: ignitability, corrosivity, toxicity, or reactivity. Hazardous waste streams from the repository could include certain used rags and wipes contaminated with solvents.

DOE would use current (as described in Chapter 3, Section 3.1.12) or similar methods to handle the waste streams generated by its preconstruction testing and performance confirmation activities. It would also use offsite landfills to dispose of solid waste and construction debris; accumulate and consolidate hazardous waste and transport it off the site for treatment and disposal; treat and reuse wastewater; and treat and dispose of sanitary sewage. Based on site characterization experience, these activities would result in only small impacts to the regional waste disposal capacity.

4.1.12.2 Waste and Materials Impacts from Construction, Operation and Monitoring, and Closure

The construction phase would generate nonhazardous, nonradioactive wastes and some hazardous waste from the use of such materials as resins, paints, and solvents. Nonhazardous, nonradioactive wastes would include sanitary and industrial solid wastes, construction debris, industrial wastewater, and sanitary sewage. Table 4-40 lists the estimated quantities of waste that the construction phase would generate. These estimates are based on construction experience, water use estimates, and Yucca Mountain Site Characterization Project experience with wastewater generation from dust suppression.

Table 4-40. Waste quantities generated during the construction phase.

Waste type	Operating mode	
	Higher-temperature	Lower-temperature
Construction debris (cubic meters) ^a	5,000	5,000 - 9,300
Hazardous (cubic meters)	1,200	1,200 - 2,300
Sanitary and industrial solid (cubic meters)	11,000	12,000
Sanitary sewage (million liters) ^b	180	180
Industrial wastewater (million liters)	46	55 - 59

a. To convert cubic meters to cubic feet, multiply by 35.314.

b. To convert liters to gallons, multiply by 0.26418.

DOE could use existing Nevada Test Site landfills to dispose of nonrecyclable construction debris and sanitary and industrial solid waste. However, as part of the Proposed Action, DOE would construct a State-permitted landfill on the Yucca Mountain site to dispose of nonrecyclable construction debris and sanitary and industrial solid waste. Section 2.1.2.1.4.3 describes the landfill. If the repository generates construction and demolition debris and sanitary and industrial waste beyond the capacity of this landfill, the excess nonhazardous waste would be disposed of at Nevada Test Site landfills. As listed in Table 4-40, DOE estimates a maximum of 9,300 cubic meters (330,000 cubic feet) of construction debris. If the Department chose not to build a landfill at the repository site, it could ship construction debris to the Test Site's Area 9 U10C Landfill, which has a disposal capacity of 990,000 cubic meters (35 million cubic feet) (DIRS 101811-DOE 1996, p. 4-37). The disposal of construction debris generated during the construction phase would consume less than 1 percent of the disposal capacity in this landfill. DOE could also ship repository-generated sanitary and industrial solid waste to the Test Site for disposal in the Area 23 landfill, which has a capacity of 450,000 cubic meters (16 million cubic feet) (DIRS 101811-DOE 1996, p. 4-37). The disposal of the maximum of 12,000 cubic meters (420,000 cubic feet) of sanitary and industrial solid waste generated during the construction phase at the Area 23 landfill would use less than 3 percent of the disposal capacity.

DOE would package hazardous waste and ship it off the site for treatment and disposal. The Department could continue to dispose of such waste in conjunction with the Nevada Test Site, which has contracts with commercial facilities, or could contract separately with the same or another commercial facility. No more than 2,300 cubic meters (81,000 cubic feet) of hazardous waste (see Table 4-40), weighing 2,300 metric tons (2,500 tons), would be generated during the construction phase. By comparison, 44,000 metric tons (48,000 tons) of hazardous waste was managed in Nevada in 1999 (DIRS 156935-EPA 2001, pp. ES-7). Regional capacity for treatment and disposal of hazardous waste is much greater than the

quantity that would be generated at Yucca Mountain. For example, the hazardous waste incineration capacity in western states through 2013 has been estimated at seven times the demand for this service (DIRS 103245-EPA 1996, pp. 32, 33, 35, 46, 47, and 50). The landfill capacity for hazardous waste disposal would be about 50 times the demand. Therefore, the impact on regional hazardous waste capacity from repository-generated hazardous waste during the construction phase would be very small.

DOE would treat and dispose of sanitary sewage and industrial wastewater at onsite facilities. Sanitary sewage from the North Portal Operations Area would go to an existing septic system. The Department would install another septic system to dispose of sanitary sewage from the South Portal Development Area. The industrial wastewater from surface facilities would flow to an evaporation pond at the North Portal Operations Area and wastewater from the subsurface would flow to an evaporation pond at the South Portal Development Area. Sludge would accumulate in the North Portal Operations Area evaporation pond so slowly that DOE would not need to remove it before the closure of the pond (DIRS 102599-CRWMS M&O 1998, pp. 65 to 67). The accumulated sludge at the South Portal Development Area evaporation pond, which would consist of mined rock, portland cement, and fine aggregate, would be removed as needed and added to the excavated rock pile (DIRS 104910-Koppelaar 1998, p. 3). In addition, under the lower-temperature operating mode with surface aging, DOE would install a small evaporation pond for rinsewater from the concrete batch plant as needed.

Activities during the operation and monitoring phase would generate radioactive and nonradioactive wastes and wastewaters and some hazardous waste. DOE does not expect to generate mixed waste. However, repository facilities would have the capability to package and temporarily store mixed waste that operations could generate under unusual circumstances. In addition, the medical clinic would generate a small amount of medical waste that DOE would dispose of in accordance with applicable Federal and State of Nevada requirements. Table 4-41 lists the estimated total waste quantities for repository activities associated with the operation and monitoring phase. These estimates do not include used solar panels because DOE anticipates that recycling options would be available by the time the first solar panels would require replacement, about 2030. Solar panel replacement once every 20 years (DIRS 153882-Griffith 2001, p. 8) would generate about 350 metric tons (390 tons) of material for recycling. Replacement would occur 4 to 16 times, depending on the operating mode.

Table 4-41. Waste quantities generated during the operation and monitoring phase.

Waste type	Operating mode	
	Higher-temperature	Lower-temperature
Low-level radioactive (cubic meters) ^a	68,000	68,000 - 91,000
Hazardous (cubic meters)	6,100	5,600 - 6,300
Sanitary and industrial solid (cubic meters)	81,000	91,000 - 150,000
Sanitary sewage(million liters) ^b	1,800	2,100 - 3,200
Industrial wastewater (million liters)	900	850 - 980

a. To convert cubic meters to cubic feet, multiply by 35.314.

b. To convert liters to gallons, multiply by 0.26418.

Major waste-generating activities during the operation and monitoring phase would include the receipt and packaging of spent nuclear fuel and high-level radioactive waste and continued development of subsurface emplacement areas. Differences in nonradioactive waste quantities from subsurface activities would be due to the different workforce sizes, main drift lengths, and emplacement spacing. Operating mode differences would affect the volumes of hazardous and low-level radioactive wastes generated at the surface facilities as a result of differences in handling the spent nuclear fuel and high-level radioactive waste, and of phase length if waste was aged on the surface. In addition, waste would be generated in personnel areas such as change rooms, restrooms, and offices. If dual-purpose canisters were used and not recycled, the low-level radioactive waste from the canisters would amount to an estimated 29,000 cubic meters (1,000,000 cubic feet) with an estimated weight of 150,000 metric tons (170,000 tons).

However, the total amount of low-level radioactive waste expected using dual-purpose canisters even with the canisters being disposed of rather than recycled would not exceed the amount listed in Table 4-41, which represents the amount expected from the receipt of uncanistered spent nuclear fuel. DOE could decide to recycle the canisters if doing so would be more protective of the environment and more cost effective than direct disposal. Recycling would require melting and recasting of the canister metal to enable other uses.

Monitoring and maintenance activities after the completion of emplacement would also generate wastes, but in much smaller quantities. The first few years after the completion of emplacement would generate greater quantities of waste due to the decontamination and decommissioning of surface nuclear facilities. DOE estimates as much as 700 cubic meters (25,000 cubic feet) of low-level radioactive waste and as much as 280 cubic meters (9,900 cubic feet) of hazardous waste from this activity.

Monitoring and maintenance activities for 76 years under the higher-temperature operating mode would generate a maximum of about 20,000 cubic meters (710,000 cubic feet) of sanitary and industrial solid waste and about 430 million liters (110 million gallons) of sanitary sewage. Monitoring and maintenance activities for 300 years under the lower-temperature operating mode would generate a maximum of about 84,000 cubic meters (about 2.9 million cubic feet) of sanitary and industrial solid waste and about 1.8 billion liters (480 million gallons) of sanitary sewage. Monitoring for periods bounded by these timeframes would generate the same wastes in proportional quantities.

DOE would treat low-level radioactive waste in the Waste Treatment Building (see Section 2.1.2.1.1.3). After treatment, DOE would need to dispose of an estimated maximum 91,000 cubic meters (3.2 million cubic feet) of low-level radioactive waste generated during emplacement activities and the decontamination of surface nuclear facilities. This waste would be disposed of at the Nevada Test Site. The Test Site accepts low-level radioactive waste for disposal from other DOE sites. It has an estimated total disposal capacity of 3.7 million cubic meters (130 million cubic feet) (DIRS 155856-DOE 2000, Table 4-1) (see Section 3.1.12). The reserve capacity (the total capacity reduced by the volume projected to be needed for disposal of other DOE low-level radioactive waste) is 2.6 million cubic meters (92 million cubic feet) (DIRS 155856-DOE 2000, Table 4-1). The impact to the reserve capacity at the Nevada Test Site from the disposal of repository low-level radioactive waste would be 3.5 percent.

During the operation and monitoring phase DOE would dispose of sanitary sewage and industrial wastewater in the onsite wastewater systems and sanitary and industrial solid waste in the onsite landfill or at the Nevada Test Site. The sanitary sewage disposal system would be able to handle the estimated daily sewage flows, and the industrial wastewater facilities would be able to handle the estimated annual wastewater flows. DOE would use the onsite landfill to dispose of sanitary and industrial solid waste, or it could use the existing Nevada Test Site landfill in Area 23 to dispose of such waste. The Area 23 landfill has an estimated 100-year capacity for the disposal of waste generated at the Test Site (DIRS 101803-DOE 1995, p. 9); the addition of repository-generated waste during the operation and monitoring phase would necessitate its expansion.

During the operation and monitoring phase repository-generated hazardous waste would be shipped off the site for treatment and disposal in a permitted facility. DOE would need to dispose of an estimated maximum of 6,300 cubic meters (220,000 cubic feet) of hazardous waste generated by emplacement activities and the decontamination of surface facilities. The estimated maximum annual rate of hazardous waste treatment or disposal would be about 280 cubic meters (9,900 cubic feet), weighing 270 metric tons (300 tons). This peak annual volume is 1 percent of the volume of hazardous waste that was managed in Nevada in 1999. At present, a number of commercial facilities are available for hazardous waste treatment and disposal, and DOE expects similar facilities to be available until the closure of the repository. Regional capacity for treatment and disposal of hazardous waste is much greater than the quantity that would be generated at Yucca Mountain. For example, the estimated hazardous waste

incineration capacity in western states through 2013 is seven times the demand for this service (DIRS 103245-EPA 1996, pp. 32, 33, 35, 46, 47, and 50). The landfill capacity for hazardous waste disposal would be about 50 times the demand. Therefore, the impact on regional hazardous waste capacity from repository-generated hazardous waste during the operation and monitoring phase would be very small.

If unusual activities generated mixed waste, DOE would package such waste for offsite treatment and disposal. The estimated maximum annual quantity would be about 1.3 cubic meter (46 cubic feet), which would have a very small impact on the receiving facility. At present, there is commercial capacity (for example, at Envirocare of Utah, with which the Department has a contract for the treatment and disposal of mixed waste). DOE is also pursuing a permit for a mixed waste disposal facility at the Nevada Test Site that would accept mixed waste from other DOE sites for disposal. This facility has a planned capacity of 20,000 cubic meters (710,000 cubic feet) (DIRS 155856-DOE 2000, p. 2-32).

Closure activities, such as the final decontamination and demolition of the repository structures and the restoration of the site, would generate waste and recyclable materials. Table 4-42 lists estimated waste quantities for the closure phase. The ranges of quantities result from more waste generated from more years to complete closure and differences in surface facilities.

Table 4-42. Waste quantities generated during the closure phase.

Waste type	Operating mode	
	Higher temperature	Lower temperature
Demolition debris (cubic meters) ^a	220,000	220,000 - 440,000
Hazardous (cubic meters)	1,200	1,100 - 1,200
Sanitary and industrial (cubic meters)	9,500	9,300 - 12,000
Sanitary sewage (million liters) ^b	160	170 - 250
Industrial wastewater (million liters)	70	77 - 120
Low-level radioactive (cubic meters, after treatment)	3,500	3,200 - 4,600

a. To convert cubic meters to cubic feet, multiply by 35.314.

b. To convert liters to gallons, multiply by 0.26418.

DOE would dispose of demolition debris and sanitary and industrial solid waste in the onsite landfill (or at the Nevada Test Site), and sanitary sewage and industrial wastewater in the onsite septic systems and industrial wastewater system. After disposing of the waste and wastewater, DOE would close the landfill and evaporation ponds in a manner that met applicable requirements.

The Nevada Test Site landfills would have to continue operating past their estimated lives and to expand as needed. The Area 9 U10C Landfill, which accepts demolition debris, has an estimated 70-year operational life; the Area 23 landfill, which is used for sanitary and industrial solid waste disposal, has a 100-year estimated life (DIRS 101803-DOE 1995, pp. 8 and 9).

DOE would continue to dispose of hazardous and low-level radioactive wastes off the site. The Department would ship hazardous waste to an offsite vendor with the appropriate permits and available treatment and disposal capacity. The available capacity for hazardous waste treatment and disposal in the western states would far exceed the demand for many years to come (DIRS 103245-EPA 1996, pp. 32, 33, 36, 46, 47, and 50). Therefore, hazardous waste generated during closure activities would be likely to have a very small impact on the capacity for treatment and disposal at commercial facilities. DOE would ship low-level radioactive waste to a Nevada Test Site disposal facility. The disposal of low-level radioactive waste generated during repository closure at the Nevada Test Site would affect the reserve disposal capacity about two-tenths of 1 percent.

Overall Impacts to Waste Management

The overall impact of managing the Yucca Mountain repository waste streams would differ little among the operating modes, in part because DOE would build onsite facilities to accommodate construction and demolition debris, sanitary and industrial solid wastes, sanitary sewage, and industrial wastewater.

Although such activities are not currently planned, the use of existing Nevada Test Site landfills for the disposal of construction and demolition debris and sanitary and industrial solid waste would require the continuation of the operation of these facilities past their estimated lifetimes of 70 and 100 years (DIRS 101803-DOE 1995, pp. 8 and 9). Such use would probably require the expansion of landfill capacities. Use of the Nevada Test Site U10C landfill for construction and demolition debris would require at least 61 percent of the reserve capacity, and could exceed the disposal capacity by 20 percent if 440,000 cubic meters (16 million cubic feet) was to be disposed at the landfill. Use of the Nevada Test Site Area 23 landfill for sanitary and industrial solid waste disposal would use 23 to 37 percent of the disposal capacity. Further review under the National Environmental Policy Act would be completed, as required, to expand capacity of the landfills at the Nevada Test Site.

Repository-generated low-level radioactive and hazardous waste would have little impact at disposal facilities, which could readily accommodate this waste. DOE would use less than 4 percent of the reserve capacity for low-level radioactive waste disposal at the Nevada Test Site. A very small fraction of the existing offsite capacity would be used for repository-generated hazardous waste. The peak annual volume of hazardous waste would be 1 percent of the volume of hazardous waste managed in Nevada in 1999, when the State ranked fortieth in the Nation for the amount of hazardous waste managed (DIRS 156935-EPA 2001, p. ES-7). Nationally, hazardous waste treatment and disposal facilities received 6.0 million metric tons (6.6 million tons) of hazardous waste in 1999 (DIRS 156935-EPA 2001, p. ES-10). As noted above, the projected available capacity through 2013 for treatment and disposal of hazardous waste greatly exceeds demand. The impact to hazardous waste treatment and disposal capacity from repository-generated hazardous waste would be very small.

Table 4-43 lists waste quantities generated for the higher-temperature operating mode and the range of estimated waste quantities for the lower-temperature operating mode for all phases. If not recycled, dual-purpose canisters would add an estimated 29,000 cubic meters (1,000,000 cubic feet) of low-level waste.

Table 4-43. Total waste quantities generated for all phases.^a

Waste type	Operating mode	
	Higher-temperature	Lower-temperature ^b
Construction and demolition debris (cubic meters) ^c	220,000	220,000 - 440,000
Hazardous (cubic meters)	8,400	8,400 - 8,900
Sanitary and industrial solid (cubic meters)	100,000	110,000 - 170,000
Sanitary sewage (million liters) ^d	2,100	2,400 - 3,600
Industrial wastewater (million liters)	1,000	990 - 1,200
Low-level radioactive (cubic meters after treatment)	71,000	71,000 - 95,000

a. Totals for the construction, operation and monitoring, and closure phases.

b. These ranges might differ from simple addition of the minimum and maximum values listed for the constituent phases because these values might not correspond between different phases. For example, a scenario that maximizes impacts during construction could result in minimal impacts during operations.

c. To convert cubic meters to cubic feet, multiply by 35.314.

d. To convert liters to gallons, multiply by 0.26418.

4.1.12.3 Impacts from Hazardous Materials

The operation of the Yucca Mountain Repository would require the use of hazardous materials including paints, solvents, adhesives, sodium hydroxide, dry carbon dioxide, aluminum sulfate, sulfuric acid, and compressed gases. DOE has programs and procedures in place to procure and manage hazardous

materials (DIRS 104842-YMP 1996, all), ensuring their procurement in the appropriate quantities and storage under the proper conditions. At the repository, DOE would use an automated inventory management program (DIRS 104508-CRWMS M&O 1999, p. 62) to control and track inventory.

4.1.12.4 Waste Minimization and Pollution Prevention

DOE would develop a waste minimization and pollution prevention awareness plan similar to the plan it has used during site characterization activities at Yucca Mountain (DIRS 103203-YMP 1997, all). The goal of this new plan would be to minimize quantities of generated waste and to prevent pollution. To achieve this goal, DOE would establish requirements for each onsite organization and identify methods and activities to reduce waste quantities and toxicity.

DOE would recycle materials to the extent that it was cost-effective, feasible, and environmentally sound. Table 4-44 lists estimated quantities of materials that DOE would recycle during the life of the repository.

Table 4-44. Total recyclable material quantities generated for all phases.^a

Material	Operating mode	
	Higher-temperature	Lower-temperature ^b
Recyclables (cubic meters) ^{c,d}	230,000	260,000 - 370,000
Steel (metric tons) ^e	51,000	51,000 - 240,000
Dual-purpose canisters ^f (cubic meters)	29,000	29,000
Oils and lubricants (liters) ^g	22 million	34 million - 67 million
Solar panels (metric tons)	1,700	1,700 - 5,700

a. Total for construction, operation and monitoring, and closure phases.

b. These ranges might differ from simple addition of the minimum and maximum values listed for the constituent phases because these values might not correspond between different phases. For example, a scenario that maximizes impacts during construction could result in minimal impacts during operations.

c. Nonhazardous, nonradioactive materials such as paper, plastic, glass, and nonferrous metals.

d. To convert cubic meters to cubic feet, multiply by 35.314.

e. To convert metric tons to tons, multiply by 1.1023.

f. If dual-purpose canisters were used they would be recycled if appropriate, with regard to protection of the environment and cost-effectiveness. Estimated weight is 150,000 metric tons.

g. To convert liters to gallons, multiply by 0.26418.

DOE has identified pollution prevention opportunities in the repository conceptual design process. The Waste Treatment Building design includes recycling facilities for the large aqueous low-level radioactive waste stream [690,000 liters (182,000 gallons) per year for the uncanistered packaging scenario] (DIRS 100248-CRWMS M&O 1997, p. 23) that would result from decontamination activities. Wastewater recycling would greatly reduce water demand by repository facilities, as well as the amount of wastewater that would otherwise require disposal. In addition, DOE would use practical, state-of-the-art decontamination techniques such as pelletized solid carbon dioxide blasting that would generate less waste than other techniques.

In addition, DOE would use automated maintenance tracking and inventory management programs that would interface with the procurement system (DIRS 104508-CRWMS M&O 1999, p. 62). These systems would assist in ensuring the proper maintenance of equipment through a preventive maintenance approach, which could lead to less waste generation. Inventory management would prevent overstocking that could allow chemicals and other items to exceed their shelf lives and become waste.

4.1.13 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to identify and address the potential for their activities

to cause disproportionately high and adverse impacts to minority or low-income populations. This section uses the results of analyses from other disciplines and consideration of unique exposure pathways, sensitivities, and cultural practices to determine if disproportionately high and adverse impacts to human health or the environment of minority or low-income populations are likely to occur from repository performance confirmation, construction, operation and monitoring, and closure activities.

4.1.13.1 Methodology and Approach

DOE performs environmental justice analyses to identify whether any high and adverse impacts would fall disproportionately on minority and low-income populations. The potential for environmental justice concerns exists if the following could occur:

- ***Disproportionately high and adverse human health effects:*** Adverse health effects would be risks and rates of exposure that could result in latent cancer fatalities and other fatal or nonfatal adverse impacts to human health. *Disproportionately high and adverse human health effects* occur when the risk or rate for a minority or low-income population from exposure to a potentially large environmental hazard appreciably exceeds or is likely to appreciably exceed the risk to the general population and, where available, to another appropriate comparison group (DIRS 103162-CEQ 1997, all).
- ***Disproportionately high and adverse environmental impacts to minority or low-income populations:*** An adverse environmental impact is one that is unacceptable or above generally accepted norms. A disproportionately high impact is an impact (or the risk of an impact) to a low-income or minority community that significantly exceeds the corresponding impact to the larger community (DIRS 103162-CEQ 1997, all).

The approach to environmental justice analysis first brings together the results of analyses from different technical disciplines that focus on consequences to certain resources, such as air, land use, socioeconomics, air quality, noise, and cultural resources, that in turn could affect human health or the environment. On the basis of these analyses, DOE identified potential impacts on the general population. Second, based on available information, the approach assesses whether there are unique exposure pathways, sensitivities or cultural practices that would result in different impacts on minority or low-income populations. If potential impacts identified under either assessment would be high and adverse, the approach then compares the impacts on minority and low-income populations to those on the general population to determine whether any high and adverse impacts fall disproportionately on minority and low-income populations. In other words, if high and adverse impacts on a minority or low-income population would not appreciably exceed the same type of impacts on the general population, no disproportionately high and adverse impacts would be expected. In making these determinations, DOE considers geographical areas that contain high percentages of minority or low-income populations as reported by the Bureau of the Census. As discussed in Chapter 3, Section 3.1.13, DOE used 2000 Census data for minority populations and 1990 Census data for low-income populations as the best, readily available information that would allow identification of the minority and low-income populations.

The EIS definition of a minority population is in accordance with the basic racial and ethnic categories reported by the Bureau of the Census. A minority population is one in which the percent of the total population comprised of a racial or ethnic minority is meaningfully greater than the percent of such groups in the total population [for this EIS, a minority population is one in which the percent of the total population comprised of a racial or ethnic minority is 10 percentage points or more higher than the percent of such groups in the total population (DIRS 103162-CEQ 1997, all)]. Nevada had a minority population of 34.8 percent in 2000. For this EIS, therefore, one focus of the environmental justice analysis is the potential for construction, operation and monitoring, and closure of the proposed repository to have disproportionately high and adverse impacts on the populations in census tracts in the